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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/676,728	09/30/2003	Daniel Wayne Bedell	HSJ9-2003-0126US1	2947

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EXAMINER	
TUGBANG, ANTHONY D	
ART UNIT	**PAPER NUMBER**
3729	

MAIL DATE	DELIVERY MODE
07/06/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/676,728	BEDELL ET AL.	
	Examiner	Art Unit	
	A. Dexter Tugbang	3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) *11,12 and 14* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10 and 13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☒ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/30/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of the invention of Group I, Claims 4 through 9 in the reply filed on April 9, 2007 is acknowledged.

2. Claims 11, 12 and 14 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on April 9, 2007.

Oath/Declaration

3. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

> The oath or declaration is defective because:
> It does not state that the person making the oath or declaration acknowledges the duty to disclose to the Office all information known to the person to be material to *patentability* as defined in 37 CFR *1.56*.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

5. Claims 1 through 10 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 1, the phrases of "the P1" (line 2) and "the P3" (line 3), each lack positive antecedent basis.

In Claim 8, the phrase of "said PS layer" (line 2) lacks positive antecedent basis. Furthermore, what previous layer is "said PS layer" referring to? The examiner presumes this recitation is referring to the "sacrificial layer" (line 5 of Claim 1).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1, 2 and 4 through 9, are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al 6,278,591 in view of Cohen et al 5,141,623.

Chang discloses a method of making a write pole top for a magnetic head comprising: fabricating P1 (e.g. 302), coils (e.g. 366, 372) and a P2 flux shaping layer (e.g. 312); depositing a P3 layer (e.g. 342) on the P2 flux shaping layer by plating; shaping the P3 layer into a P3 pole tip (at the ABS in Fig. 63); and encapsulating the P3 pole top layer in an encapsulating material (e.g. 380).

Chang does not teach that the P3 layer is patterned by depositing a CMP stop layer on the P3 layer, depositing at least one sacrificial layer on the CMP stop layer, and removing the at least one sacrificial layer to leave the P3 pole tip.

Cohen discloses a pole patterning process that includes depositing a CMP stop layer (e.g. 29, 30) on a P3 layer (e.g. 24 in Fig. 3J), depositing at least one sacrificial layer (e.g. 32) on the CMP stop layer, and removing the at least one sacrificial layer to leave the P3 pole tip (see sequence of Figs. 3G to 3J).

Regarding Claim(s) 2, Cohen further teaches within the process that the P3 layer material is NiFe (col. 5, lines 30-31).

Regarding Claim(s) 4 through 6, Cohen further teaches that the sacrificial layer is NiFe (col. 5, lines 60-65) and also includes a seed layer (e.g. 27). The sacrificial layer is created by forming a cavity surrounded by photo-resist material (e.g. 29) where the sacrificial material fills or is deposited in the cavity.

Regarding Claim(s) 7 through 9, Cohen further teaches shaping of the P3 layer is done by ion milling where the sacrificial layer is a mask and the CMP stop layer is a secondary mask. The ion milling is used to bevel sides of the P3 pole tip and is beveled at an angle of 15° (see Figs. 3F to 3J, and the Tilt angle at Table in col. 6).

The benefits of the overall pole patterning process of Cohen allows better pole alignment between P3, P2 and P1 with increased data storage densities (col. 3, lines 3-5) and provides a CMP stop layer and sacrificial layer that is more controllable and readily removable (col. 2, lines 66-68).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Chang by utilizing the pole patterning process of Cohen, to provide the benefits of better pole alignment with increased data storage densities and a patterning technique that is more controllable and readily removable.

8. Claims 3 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al in view of Cohen et al, as applied to Claim 1 above, and further in view of Tran et al 5,853,960.

Chang, as modified by Cohen, discloses a manufacturing method as relied upon above. The modified Chang method does not teach that the CMP stop layer is made of Al_2O_3, i.e. aluminum oxide, and that the CMP stop layer matches the material of the encapsulating material.

It is noted that the encapsulating material of Chang is an insulating material (see Chang col. 18, lines 42-44) and one of the materials of the CMP stop layer material of Cohen is a photoresist.

Tran shows that it is known to utilize aluminum oxide as a photoresist material (col. 7, lines 6-14) and that aluminum oxide is a well known and conventional insulating material.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Chang by utilizing aluminum oxide (Al_2O_3) as the material for both the CMP stop layer and the encapsulating material to provide the necessary patterning material in the shaping of the P3 layer and to insulate the P3 layer.

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chang et al in view of Cohen et al, as applied to Claim 1 above, and further in view of Ohtsu et al 20040052009.

Chang, as modified by Cohen, discloses a manufacturing method as relied upon above. The modified Chang method does not teach that the P3 pole tip has a width less than 200 nm.

Ohtsu teaches forming P3 (e.g. 31 or 33) to a trackwidth less than 200 nm (paragraphs [0049]), which would thus form the width of P3 less than 200 nm. The benefit of Ohtsu having

this width allows improvements in asymmetry and in the utility factor (see paragraph [0048] and [0050]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have modified the method of Chang by forming the P3 pole tip to a width less than 200 nm, as taught by Ohtsu, to provide improvements in the asymmetry and the utility factor.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 571-272-4570. The examiner can normally be reached on Monday - Friday 7:30 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. Dexter Tugbang/
Primary Examiner
Art Unit 3729

June 25, 2007